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ABSTRACT

This paper reports the first results of a three-year longitudinal study of the social maps of children beginning the transition to adolescence. This exploratory study is guided by Bronfenbrenner's conception of the ecology of human development stressing the importance of a phenomenological orientation to development in the context of ecological transitions. The study focuses on characteristics of children's social networks (the web of relationships in which the individual is involved) as a function of the neighborhood type, socioeconomic status and level of physical maturation. The social heterogeneity of the social network (e.g., the relative salience of peers vs. adults) is a primary concern. The child's and parent's perceptions of the network, of the people available to help the child and the child's friends, are compared within the context of ecological, socioeconomic and maturational factors. The results (for 111 sixth grade children from three contrasting neighborhood schools) shed some light on age segregation and the overall heterogeneity of children's social environments as they face the transition to adolescence. They provide a context and a baseline for the longitudinal study. (Author)

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THE SOCIAL MAPS OF CHILDREN APPROACHING ADOLESCENCE: STUDYING THE ECOLOGY OF YOUTH DEVELOPMENT[1]

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I. Introduction to the Problem

In his recent American Psychologist paper on the ecology of human development, Bronfenbrenner (1977a) identifies several important research perspectives. This report deals with an exploratory study that seeks to incorporate two of those perspectives: the importance of a phenomenological orientation in understanding development; and, the concept of "ecological transitions" as a focus for research.

Bronfenbrenner emphasizes the need to address the interplay of objective and subjective realities in shaping the processes and outcomes of development. This phenomenological approach implies the need to study the "social maps" that both reflect and influence the behavior and development of children. In this study we are exploring the way developmental and environmental differences and changes are related to the social maps of youth. The study incorporates an attempt to relate the child's map of his or her social field to parental perception and evaluation of those relationships. Moreover, it seeks to relate these factors to success in the context of the school.

The study is designed to examine the processes of social mapping in the context of a key "ecological transition"--from elementary to junior high school. These two settings (i.e., the elementary and junior high school) typically represent contrasting contexts for behavior and development, as recent work by Blyth, Simmons and Bush (1977) makes clear. The elementary school is typically smaller, more child-centered, emphasizes more intensive teacher-child relationships and, to use the terminology suggested by Bronfenbrenner, contains more "cross-contextual dyads" than does the junior high school. When we recall that this ecological transition is occurring simultaneously with the vital maturational events of

puberty, its importance as a context for research on the ecology of youth development becomes vividly apparent.

Our central research question is this: How do the social maps of children (particularly in reference to their relationships with adults) change as they make the transition from elementary to junior high school, as a function of maturational, demographic and socioeconomic factors? The study is designed to shed some light on this question.

The social environment of American youth is a continuing issue of concern to both the professional community and the public at large. This concern is manifest in research from a variety of perspectives. Orientation and conformity to peers vs. adults has been a prominent topic in the study of adolescence and the transition from childhood to adolescence (e.g., Bronfenbrenner, 1970, 1975; Browerman and Kinch, 1959; Brittain, 1963, 1967; Coleman, et. al., 1974). The organization of "crowds" and "cliques" has been studied as an important aspect of youth culture (e.g. Coleman, 1961; Dunphy, 1963). Emerging from this substantial body of work has been an appreciation for the interplay of factors within the family (e.g., patterns of independence and dependence) and the broader social scene of the adolescent (e.g., Elder, 1968; Kandel and Lesser, 1969) in shaping development. Sociometric studies using multivariate approaches to the issue of the relative influence of parents vs. peers (e.g. Condry and Simon, 1974) have added support to the hypothesis that age segregation and the autonomous peer groups are significant issues for any understanding of social development.

Describing and analyzing the social fields of children is a difficult task. Bronfenbrenner (1977b) has argued for a revival Lewin's (1936; 1951) orientation towards the psychology of social mapping--i.e. the individual's

representation of the environment in cognitive and affective fields. The present study seeks to incorporate this perspective into a sociometric model of social networks borrowed and adapted from the work of anthropologists and sociologists to meet this need (e.g. Bott, 1971; Craven and Wellman, 1974; Mitchell, 1967).

To gain an appreciation of the child's social map we first ask the child to identify the people who are salient in the social environment. Only then are the "objective" characteristics of those people and their relationships to the child ascertained. To complement the child's description we can then ask for a parental assessment of that social field. The congruence of the social map as seen by the parent and the child thus becomes a substantive research issue in its own right. By posing a series of questions designed to elicit a picture of the child's social world as seen by that child and then examining the age and role characteristics of that world we begin to understand the child's interpersonal relationships as the transition to adolescence begins. Such an approach taps important features of the social environment as both a context and a baseline for assessing development. That is the goal of the current exploratory analysis.

In the present study, social networks are viewed as part of the social resources of the child. This conception of networks as resources is salient in American studies of social networks--particularly the social networks of parents (e.g., Brassard, 1976; Bronfenbrenner and Cochran, 1976; Collins and Pancoast, 1976; Furstenberg, 1976; Gottlieb, 1977; Stack, 1976; and Tietjen, 1977). The current study addresses ecological, socioeconomic and maturational differences in the characteristics of children's social networks, and thus in the social resources available to them. Who

knows the child? Who takes an interest in the child? Who does the child feel he or she knows well? How do the parent's and child's answers to these questions correspond? The subjective and objective answers to these questions constitute the child's "social resources." The perceived enduring interest of others, particularly non-familial adults, is believed to be a a prime component of a "rich" social environment (Bronfenbrenner, 1970, 1977a; Garbarino, 1976). The analysis focuses on the child's social network as it is represented in a subjective map of the social environment. Because of the exploratory nature of the study and its relation to a future longitudinal analysis no specific hypotheses about the direction of observed differences are offered.

II. Method

A. Subjects: The study focuses on the sixth grades of three elementary schools in and around a small Northeastern city; one rural, one suburban, and one urban. A total of 111 children (60 males and 51 females) were finally included in the study (after obtaining parental consent and cooperation).

B. Interviews: Children were individually interviewed at school using an instrument designed to identify their social maps*. The interviewer used the following request: "I would like to know about the things that you do with people who are not living in your home. Let us begin by making a list of the people you know best or who know you best, outside your immediate family." In the initial listing the

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* Copies of all instruments are available from the first author.

child could name as many people as he or she wished. The child was then asked to review the list and identify the "top ten"--i.e. those known best or knowing the child best. The interviewer asked the following: "I would like to know a little more about the things you do with the people who are especially important to you. Let us start by picking the ten people who are most important to you. (Interviewer places an X in front of the appropriate names on the list.) What is the relationship of X to you? Does X know any of the other people on your list?"

Thus, for each of these "top ten", the child reported on their relationship to the child (e.g., relative, adult, institutional representative, peer, etc.), the others among the "top ten" that person knows, and the frequency and context in which the child interacts with the person. In supplementary questions the child reported on the number of people to whom he or she could go to for help with a problem. In addition, the child reported on his or her perception of the way the child's parents evaluate the child's friends. The interviewer asked: "If you needed help with some problem, who do you think would help you?" and "What do your parents think of your friends?" A five point scale was developed to represent the positiveness of the parental evaluation.

Mothers were also interviewed (in their homes, independently of their children). They also reported on the child's social environment, from their perspective. The same two supplementary questions were asked of parents as of the child (i.e., people to whom the child could go for help and the evaluation of the child's friends). In

addition, mothers were asked to name people outside the family who took an interest in the child.

Background data on the child and the family were collected as part of the interview process, including a range of other items collected as part of the larger longitudinal study (e.g., socio-economic level). The interviewer rated the child's stage of physical maturation (Preadolescent, Transitional or Early Adolescent) using a three point scale adapted from an instrument developed by Steinberg (1977).

C. Data Summary: The social map data were organized to provide a series of six descriptive indices: a) total number of persons listed; b) percent overlap between parent and child in naming the child's "top ten" network members; c) percent of network members who are "institutional representatives;" d) percent of network members who are adults; e) the mean number of others among the network known to each member of the network; f) number of adults among the "top ten" who are seen at least once a month. The supplementary questions yielded five additional dependent variables: a) parent's report on the number of people outside the family who take an interest in the child; b) the parent's report on the people to whom the child could turn for help with a problem; c) the child's report on the people to whom he or she could turn for help with a problem; d) the parent's evaluation of the child's friends; and 3) the child's perception of the parent's evaluation of the child's friends. Background data provided three factors: neighborhood, socioeconomic level and the stage of physical development. Sex and birth order were included as additional independent variables for preliminary clarifying analyses.

III. Results

Preparatory to reviewing the substantive results, Table 1 presents the overall means and intercorrelations of the social network items to be considered in the analysis.

--Table 1--

The major conclusion to be drawn from these data is that, for the most part, the characteristics of the child's map of the social networks are not redundant, and do display a measure of independence. The indices that are arithmetically associated (e.g., percent adults and number of adults seen frequently) do, of course, reveal substantial covariation ($r = .78$). In all the substantive cases, however, the covariance of indices is less than 16%. This permits the use of a series of ANOVA's for testing the effects of ecological and developmental factors.

The major substantive results are presented in Tables 2 and 3. Table 2 presents six characteristics of the children's social networks as a function of neighborhood, stage of physical development, and social class. No pattern of sex or birth order differences was found, and, therefore, the tables do not report these factors. Children from the rural school list

--Table 2--

more people as part of their network (16.8) than do the urban children (12.2) or the suburban children (11.1). On the other hand, suburban children and their mothers exhibit greater congruence in their reports of persons in the "top ten" (57.1% overlap) than do urban children (46.3%) and rural children (39.9%). The correlation between total number listed and child-parent congruence is $r = -.18$. This indicates there is little reason to believe that the neighborhood differences in parent-child congruence are

an artifact of the difference in total number of persons listed (i.e., the fewer the people listed the "easier" it is to find congruence).

There is a marginally significant trend (p less than .10) for urban children to report a significantly higher proportion of adults (33.3%) than suburban (22.3%) or rural (19.1%) children. However, urban children report less "interconnectedness" within their networks. That is, the mean number of people within the "top ten" known to each person is lower (3.5 for the urban children as compared with 4.2 for the suburban and 5.6 for the rural children). The correlation between the proportion of adults in the network and the inter-connectedness of the network is r = -.23. This indicates that there is only a weak negative association (accounting for 5% of the variance) between these two factors.

Perhaps the best index of adult involvement is the number of adults listed as part of the "top ten" who are seen at least once a month. This represents a contact that is significant, enduring and integrated into the day-to-day experience of the child. This important index reveals more such contacts for the urban children (2.3) than the rural children (1.5) and the suburban children (1.0). Indeed, 60% of the suburban children reported no such relationships.

The data on stage of physical development mainly consist of a comparison of preadolescent children (N=36) with those in the early transitional state (N=71) since only four youth are in the "early adolescence" group. Although there are several comparisons involving the early adolescence group that are potentially interesting, the small numbers involved preclude confident analysis. The suggestive difference in the proportion of adults in the top ten does deserve comment, however. Whereas preadolescent child-

ren report 30.9% of their "top ten" to be adults, the transitional group reports 19.9% and the early adolescence group only 11.0%.

There is a positive relationship between socioeconomic level and the degree of parent-child congruence. The lowest level of congruence (37.2%) was found in the lowest socioeconomic group while the highest levels (57.9% and 50.8%) are found in the two highest socioeconomic groups. A somewhat consistent negative relation between the proportion of institutional representatives and socioeconomic level is observed. Only among the lowest socioeconomic group (N=20) do institutional representatives (e.g., teachers and recreation workers) play a major role (10.3%).

The existence of these differences and the probability of socioeconomic differences among the neighborhoods requires an empirical test of the proposition that socioeconomic differences account for the neighborhood differences. The three neighborhoods do differ with respect to socioeconomic levels. On the five point socioeconomic index used the suburban neighborhood is significantly (p less than .001) more affluent (mean 3.73) than the rural (mean 3.25), and the urban neighborhood is less affluent still (mean 2.63). This finding suggests the need to treat socioeconomic level as a covariate in the analysis of neighborhood differences. When this is done it substantially affects only one of the comparisons, reducing the significance level of the difference in the "percent adults" from .104 to .202. Thus, despite the fact that neighborhood type and socioeconomic level are ecologically confounded in reality, there appear to be independent "effects" for both.

Table 3 reports five items designed to deal with the issue of perceived social resources. Parents of children from the rural school report

--Table 3--

a smaller number of people outside the family taking an interest in the child (2.3) in contrast to urban (3.1) and suburban parents (3.5). There is, however, no such difference in the number of people to whom the child could go with a problem. There is a difference on this item among the children. Urban children report less people to whom they could go for help with a problem (1.6) than do suburban (2.4) and rural children (2.5). No reliable differences are found on these five items as a function of stages in physical development. There is, however, a positive relation between socioeconomic level and the parent's report of people taking an interest in the child. For the lowest socioeconomic level the number of persons taking an interest is roughly half what it is for the two highest socio- economic levels (2.0 vs. 3.6).

While there is no difference in parent evaluation of the child's friends as a function of neighborhood, there are differences in the children's perception of their parent's opinions. Although all three groups are well above the midpoint, rural children report their parents to be less positive (3.6) than do urban children (4.1) and suburban children (4.4). No differences on this item were found as a function of physical development. A positive relation between socioeconomic level and parental evaluation of the child's friends was found, however. At the lowest socioeconomic level the mean parental rating is 3.8. At the highest levels it is 4.5. There is a marginally significant replication of this pattern among the children's reports of their parent's opinions. To assess the role of socioeconomic level in the neighborhood differences a covariance analysis was undertaken. The results do not substantially affect the three neighborhood differences noted above, reducing the reliability of the differences from p less than .038 to p less than .058 at the "worst".

IV. Discussion and Conclusion

The main value of these results is that they encourage continuing exploration of the children's social maps during the ecological and maturational transitions of early adolescence. To study the ecology of human development we must be able to analyze what Bronfenbrenner (1977a) calls the phenomenology of social environment and experiences. Particularly, we must be able to assess changes in that environmental phenomenology over time as a function of contextual factors such as ecologically contrasting neighborhoods, and in terms of the relationship with significant social agents such as parents and teachers. The present study has begun to illustrate a tactic for such developmental assessments, namely the study of social maps. These maps are an attempt to describe the context of the child's experience and provide insight into the joint effects of environmental and biological change. This analysis of interactions is an essential concern of human ecology as a discipline. The present study was designed to provide a context and baseline for the longitudinal study of the transition from childhood to adolescence as it occurs in the ecological transition from elementary to junior high school.

The results of the initial cross-sectional analysis indicate a number of interesting differences and trends. The social network data provide a social map of the phenomenological world of the child. These data reveal that children in different ecological settings and at different stages of development report (and presumably experience) different social maps. The fact that the differences do not uniformly "favor" one setting over another is itself interesting. For example, whereas suburban children report that less people are in their network than do rural children (11.1 vs. 16.8) there is greater congruence between their identification of the "top ten"

and their mother's identification than there is among rural families (57.1% vs. 39.9%), although the two measures are not themselves significantly correlated ($r = -.18$). The congruence of child and parent perceptions of their network, the role of adults in the child's network and the "size" of the network are different as a function of setting and/or stage of physical development. Particularly important is the finding that many children in the suburban neighborhood do not name any adults among the ten people who know them best and who they see at least once a month. As noted previously, the more biologically mature youth report less adult involvement in their network (31% vs. 18%). These results reinforce the widely held concern over age-segregation in American life, as a developmental and historical trend.

TABLE 1: MEANS AND INTERCORRELATIONS OF SOCIAL NETWORK DATA

	Mean	Correlations: 1	2	3	4	5	6	7	8	9
1. Total Number of persons listed	13.5	-	-.18*	-.01	.09	.33**	.21**	.04	-.06	.12
2. Overlap between parent/child for "top ten"	48.5		-	-.05	.05	-.16*	.02	.23**	.08	.14
3. % Institutional Representatives	4.9			-	.39**	-.05	.40**	.00	.01	-.10
4. % Adults	23.1				-	-.23**	.78**	.18*	.20*	-.14
5. Mean Number of others in top ten known	4.6					-	-.03	-.18*	-.11	.14
6. Number of adults among "top ten" seen at least once a month	1.4						-	.08	.25**	-.03
7. Parent Report number of people taking an interest in the child	2.9							-	.08	.10
8. Parent Report: number of people who would help child with problem	2.2								-	.31***
9. Child Report: number of people who would help with a problem	2.3									-

* p less than .05; ** p less than .01

TABLE 2: CHARACTERISTICS OF YOUTH SOCIAL NETWORKS BY NEIGHBORHOOD SCHOOL, STAGE OF PHYSICAL DEVELOPMENT AND SOCIAL CLASS

	MEANS Of the ten known best:					
	Total Number of Persons Listed	a. Overlap Between Parent & Child List: Percent	b. Percent Institutional Representatives	c. Percent Adults	d. Mean Number of Others in List Known	e. Number of Adults seen at least once/mo.
I. NEIGHBORHOOD:						
Rural (N=44)	16.8	39.9	3.3	19.1	5.6	1.5
Urban (N=19)	12.2	46.3	8.5	33.3	3.5	2.3
Suburban (N=48)	11.1	57.1	5.1	22.3	4.2	1.0
Significance: p less than	.002	.007	.254	.104	.001	.031
II. PHYSICAL DEVELOPMENT:						
Preadolescent (N=36)	14.4	51.1	6.4	30.9	4.0	1.6
Transitional (N=71)	13.1	46.5	4.5	19.9	4.9	1.4
Early Adolescent (N=4)	14.3	59.8	0.0	11.0	4.1	.8
Significance: p less than	.707	.308	.485	.043	.114	.615
III. SOCIAL CLASS:						
1 (low) (N=20)	13.8	37.2	10.3	27.8	4.9	1.8
2 (N=44)	14.0	45.4	3.5	24.5	4.5	1.7
3 (N=35)	13.3	57.9	4.3	21.2	4.8	1.0
4 (high) (N=11)	12.8	50.8	3.6	17.5	3.8	1.4
Significance: p less than	.646	.005	.020	.234	.662	.184

No significant differences by birth order or sex were found.

TABLE 3: ASPECTS OF THE SOCIAL ENVIRONMENT: CHILD AND PARENT PERCEPTIONS BY NEIGHBORHOOD SCHOOL, STAGE OF PHYSICAL DEVELOPMENT AND SOCIAL CLASS

MEANS

	PARENT'S REPORT--	CHILD AND PARENT REPORTS--			
	# people taking an interest in child	Parent's Opinion of Child's Friends:		# people who would help child with problems:	
		Child's Perception (0-5)	Parent's Report (0-5)	Child's Report	Parent's Report
I. NEIGHBORHOOD					
Rural (N=44)	2.3	3.6	4.1	2.5	2.3
Urban (N=19)	3.1	4.1	4.2	1.6	2.1
Suburban (N=48)	3.5	4.4	4.4	2.4	2.3
Significance: p less than	.038	.033	.340	.033	.756
II. PHYSICAL DEVELOPMENT					
Preadolescent (N=36)	3.0	3.9	4.3	2.4	2.5
Transitional (N=71)	2.9	4.1	4.2	2.3	2.1
Early Adolescent (N=4)	3.8	4.5	4.8	1.8	2.3
Significance: p less than	.724	.696	.550	.581	.260
III. SOCIAL CLASS					
1 (low) N=20)	2.0	3.3	3.8	2.2	1.9
2 (N=44)	2.8	4.1	4.2	2.1	2.3
3 (N=35)	3.6	4.4	4.5	2.6	2.3
4 (high) (N=11)	3.6	3.7	4.5	2.4	2.8
Significance: p less than	.044	.098	.012	.606	.239

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